

IN THE CLAIMS:

This listing of claims is provided for the Examiner's convenience. No claims have been amended, canceled or added in this response.

1. (Previously presented) A method for improved space allocation in a file system having a set of storage blocks in a mass storage system, including
maintaining an active map of said storage blocks not available for writing data;
generating, for each one of a plurality of regions of said storage blocks in said mass storage system, a value indicative of a number of storage blocks available for writing data in said region, based on said active map and at least one snapshot of the file system, each said region including a plurality of storage blocks in the active file system and a plurality of storage blocks in each of said at least one snapshot, each said at least one snapshot of the file system having a copy of said active map as said active map existed at a previous time; and
selecting, based on said values, at least one of said plurality of regions for writing data.
2. (Previously presented) A method as in claim 1, wherein said step of selecting comprises setting an allocation threshold and comparing the values to the threshold.
3. (Previously presented) A method as in claim 2, further comprising writing the data into the selected at least one of said plurality of regions.

4. (Previously presented) A method as in claim 3, wherein said step of setting comprises setting the threshold based on a percentage of the number of storage blocks available for writing data in the file system.

5. (Previously presented) A method as in claim 3, wherein said step of selecting comprises selecting a first of said plurality of regions with the corresponding value exceeding the threshold.

6. (Previously presented) A method as in claim 1, wherein each said value is a binary number.

7. (Previously presented) A method as in claim 6, wherein each said value is stored in a data block containing one or more binary numbers each corresponding to a unique region.

8-9. (Canceled)

10. (Previously presented) A method as in claim 3, wherein said selecting comprises linearly searching said plurality of regions to select a first region with the corresponding value exceeding the threshold.

11. (Canceled)

12. (Previously presented) A method as in claim 3, further including selecting an additional region when said data requires more blocks than available in the selected at least one of said plurality of regions.

13. (Canceled)

14. (Previously presented) An apparatus for improved data space allocation including a file system that has a set of storage blocks and a mass storage system; wherein

said file system maintains an active map of storage blocks of the set of storage blocks that are not available to write data;

said file system generates, for each one of a plurality of equal regions of said storage blocks in said mass storage system, a value that corresponds to said region and is indicative of a number of storage blocks available to write data in said region, based on said active map and at least one snapshot of the file system, each said region including a plurality of storage blocks in the active file system and a plurality of storage blocks in each of said at least one snapshot, each said at least one snapshot of the file system having a copy of said active map as said active map existed at a previous time; and

said file system selects for writing data at least one of said plurality of regions in response to said values.

15. (Previously presented) An apparatus as in claim 14, wherein in the course of selecting said file system sets an allocation threshold and compares the values to the threshold.

16. (Previously presented) An apparatus as in claim 14, wherein said file system further writes the data into the selected region.

17. (Previously presented) And apparatus as in claim 15, wherein said file system sets the allocation threshold based on a percentage of the number of storage blocks available to write data in the file system.

18. (Previously presented) And apparatus as in claim 15, wherein said file system selects a first of said plurality of regions with the corresponding value exceeding the threshold using a linear search of said plurality of equal regions.

19-26. (Canceled)

27 (Previously presented) An article of manufacture comprising a memory with program code stored therein, the program code, when executed by a processor, directs the processor to cause a file system to perform the steps of any one of claims 1-7, 10, or 12.

28. (Previously presented) A method as in claim 1, wherein said plurality of regions are equal in size.

29. (Previously presented) A method as in claim 1, wherein each of said plurality of regions of said storage blocks comprises a plurality of storage blocks, at least some of which store user data.

30. (Previously presented) An apparatus as in claim 14, wherein each of said plurality of regions of said storage blocks comprises a plurality of storage blocks, at least some of which store user data.